

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-34. Canceled.

35. (New) A method for handing over a mobile station connection established in a CDMA-based radio communications system using a first base station, comprising:

receiving at a radio network controller from a mobile station one or more downlink signal quality measurements associated with one or more neighboring base stations;

determining a target base station based on the one or more downlink signal quality measurements; the target base station including one or more first antennas transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas transmitting multiple second pilot signals using an narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference;

requesting from the target base station one or more signal quality measurements associated with the mobile station for each of some of the second pilot signals transmitted by corresponding narrow antenna beams;

determining a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station based on the one or more signal quality measurements of the second pilot signals; and

establishing a radio link for a handover connection between the desired narrow antenna beam at the target base station and the mobile station using the second phase reference of the second pilot signal corresponding to the desired narrow antenna beam.

36. (New) The method in claim 35, further comprising:

determining a location of the mobile station, and

determining the desired antenna beam using the determined location.

37. (New) The method in claim 35, wherein the desired antenna beam covers an area where the mobile station is currently located or where the mobile station is predicted to be located.

38. (New) The method in claim 35, wherein the desired antenna beam covers an area closest to where the mobile station is currently located or where the mobile station is predicted to be located.

39. (New) The method in claim 35, wherein the handover is a softer handover.

40. (New) The method in claim 35, wherein the handover is a soft or hard handover.

41. (New) A method for handing over a mobile station connection established in a CDMA-based radio communications system using a first base station, comprising:

receiving from a mobile station one or more downlink signal quality measurements associated with one or more neighboring base stations;

determining a target base station based on the one or more signal quality measurements, the target base station including one or more first antennas for transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas transmitting multiple second pilot signals using an narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference;

establishing a radio link between the target base station and the mobile station using the first broadcast signal and the first phase reference;

determining a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station; and

reconfiguring the radio link to use the desired narrow antenna beam and corresponding second phase reference.

42. (New) A radio network controller for use in a CDMA-based radio communications system and in establishing a handover connection between a mobile station and a target radio base station, comprising:

a memory for storing one or more downlink signal quality measurements associated with one or more neighboring base stations, and

processing circuitry configured to determine the target base station based on the one or more downlink signal quality measurements stored in the memory, the target base station including one or more first antennas for transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas for transmitting multiple second pilot signals using a narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference, and

wherein the processing circuitry is configured to:

request from the target base station one or more signal quality measurements associated with the mobile station for each of some of the second pilot signals transmitted by corresponding narrow antenna beams;

determine a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station based on the one or more signal quality measurements of the second pilot signals; and

establish a radio link for a handover connection between the desired narrow antenna beam at the target base station and the mobile station using the second phase reference of the second pilot signal corresponding to the desired narrow antenna beam.

43. (New) The radio network controller in claim 42, wherein the processing circuitry is further configured to:

determine a location of the mobile station based on measurement made by the target base station, and

determine the desired antenna beam using the determined location.

44. (New) The radio network controller in claim 42, wherein the desired antenna beam covers an area where the mobile station is currently located or where the mobile station is predicted to be located.

45. (New) The radio network controller in claim 42, wherein the desired antenna beam covers an area closest to where the mobile station is currently located or where the mobile station is predicted to be located.

46. (New) The radio network controller in claim 42, wherein the handover is a softer handover.

47. (New) The radio network controller in claim 42, wherein the handover is a soft or hard handover.

48. (New) A communications system incorporating the radio network controller in claim 42.

49. (New) A radio network controller for use in a CDMA-based radio communications system and in establishing a handover connection between a mobile station and a target radio base station, comprising:

a memory for storing one or more downlink signal quality measurements associated with one or more neighboring base stations, and

processing circuitry configured to determine the target base station based on the one or more downlink signal quality measurements stored in the memory, the target base station including one or more first antennas for transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas for transmitting multiple second pilot signals using an narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference, and

wherein the processing circuitry is configured to:

establish a radio link between the target base station and the mobile station using the first broadcast signal and the first phase reference;

determine a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station; and

reconfigure the radio link to use the desired narrow antenna beam and corresponding second phase reference.

50. (New) Apparatus for handing over a mobile station connection established in a CDMA-based radio communications system using a first base station, comprising:

means for receiving at a radio network controller from a mobile station one or more downlink signal quality measurements associated with one or more neighboring base stations;

means for determining a target base station based on the one or more downlink signal quality measurements; the target base station including one or more first antennas transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas transmitting multiple second pilot signals using an narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference;

means for requesting from the target base station one or more signal quality measurements associated with the mobile station for each of some of the second pilot signals transmitted by corresponding narrow antenna beams;

means for determining a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station based on the one or more signal quality measurements of the second pilot signals; and

means for establishing a radio link for a handover connection between the desired narrow antenna beam at the target base station and the mobile station using the second phase reference of the second pilot signal corresponding to the desired narrow antenna beam.

51. (New) The apparatus in claim 50, further comprising:

means for determining a location of the mobile station, and

means for determining the desired antenna beam using the determined location.

52. (New) The apparatus in claim 50, wherein the desired antenna beam covers an area where the mobile station is currently located or where the mobile station is predicted to be located.

53. (New) The apparatus in claim 50, wherein the desired antenna beam covers an area closest to where the mobile station is currently located or where the mobile station is predicted to be located.

54. (New) The apparatus in claim 50, wherein the handover is a softer handover.

55. (New) The apparatus in claim 50, wherein the handover is a soft or hard handover.

56. (New) Apparatus for handing over a mobile station connection established in a CDMA-based radio communications system using a first base station, comprising:

means for receiving from a mobile station one or more downlink signal quality measurements associated with one or more neighboring base stations;

means for determining a target base station based on the one or more signal quality measurements, the target base station including one or more first antennas for transmitting a first broadcast signal using a wide antenna beam, the first broadcast signal having a first phase reference, and wherein the one or more downlink signal quality measurements are for the first broadcast signal, and one or more second antennas transmitting multiple second pilot signals using a narrow antenna beam narrower than the wide antenna beam, the second pilot signals each having a second phase reference different from the first phase reference;

means for establishing a radio link between the target base station and the mobile station using the first broadcast signal and the first phase reference;

means for determining a desired narrow antenna beam from the multiple narrow antenna beams at the target base station for communicating with the mobile station; and

means for reconfiguring the radio link to use the desired narrow antenna beam and corresponding second phase reference.